difficult to establish. Second, the main study findings basically relate to the reduced diagnostic time found in the MSCT arm (3.4 vs. 15 h). However, precise data concerning the time required to access/perform/interpret MSCT versus the nuclear test studies were not provided. This information is of particular interest because improved logistics in the nuclear stress arm could have modified the results. It remains possible that a "fast tracked" access to the MSCT (driven by the investigators' scientific interest) was not correlated with a similar enthusiasm in the nuclear arm. This is important considering that 95% of patients allocated to the nuclear arm were sent home after a negative scan, whereas 24% of patients randomized to MSCT eventually required a nuclear study before discharge as the result of either nondiagnostic results or intermediate lesions on MSCT. In fact, fewer patients in the MSCT arm could be discharged directly from the emergency department. Finally, it is likely that the use of alternative standard of care measures would have affected the results. In Europe, many patients evaluated in chest pain units are scheduled for an early conventional exercise test (2–4). This technique seems especially attractive for very-low-risk patients (such as those in the current study), avoids radiation exposure, is widely available and easily performed from a logistic perspective, and above all, is much cheaper.

We fully agree with the suggestion of Goldstein et al. (1) regarding the need of further studies to clarify how the impressive diagnostic capability of MSCT can be best implemented in clinical practice.

***Fernando Alfonso, MD, PhD, FESC**

*H Clinico San Carlos
Interventional Cardiology
Plaza Cristo Rey
Madrid 28040
Spain
E-mail: falf@hotmail.com

doi:10.1016/j.jacc.2007.04.058

REFERENCES

1. Goldstein JA, Gallagher MJ, O'Neill WW, et al. A randomized controlled trial of multi-slice coronary computed tomography for evaluation of acute chest pain. J Am Coll Cardiol 2007;49;863–71.
2. Sanchis J, Bodi V, Llacer A, Nuñez J, Ferrero JA, Chorro FJ. Value of early exercise stress testing in a chest pain unit protocol. Rev Esp Cardiol 2002;55:1089–92.
3. Martinez-Selles M, Ortiz J, Estevez A, Andueza J, de Miguel J, Bueno H. A new risk score for patients with a normal or non-diagnostic ECG admitted to a chest pain unit. Rev Esp Cardiol 2005;58:782–8.
4. Castillo Moreno JA, Ramos Martin JL, Molina Laborda E, et al. Usefulness of clinical profiling and exercise testing in the prognostic assessment of patients admitted with chest pain but without high-risk criteria. Rev Esp Cardiol 2006;59:12–9.

Reply

To calculate the sample size of our single-center randomized trial, the primary outcome variable used was the time to diagnosis. As part of a previous study undertaken in 70 patients, we performed coronary computed tomographic angiography (CCTA) on 27 of these patients seen in the emergency department with chest pain (1). Based on information from that initial experience, we estimated that time from admission to the emergency department to definitive diagnosis would be: 5 h for patients with normal CCTA, 9 h for patients with severe stenosis who would undergo early catheterization after CCTA, and 20 h for patients who are evaluated by the standard diagnostic protocol. To detect a 25% reduction in emergency department length of stay (until definitive diagnosis), approximately 102 patients would be required to achieve a power of 80% and an alpha of 0.05. We increased the sample size to 200 to ensure adequate statistical strength.

Although time to diagnosis was the determinant of sample size, clinically a diagnostic test for triage of acute chest pain would be unacceptable for use if there were a significant occurrence of major adverse cardiac events (MACE) in those who were discharged as normal. Although this safety variable is of overriding importance, it could not be used to determine sample size because the low incidence of MACE in this low-risk patient group would require a much larger sample. Our view was that even a 3% occurrence of unanticipated MACE in this preliminary study would cast doubt on the use of CCTA for acute chest pain. As reported, there were no MACEs in either group (2). A larger multicenter trial is required to investigate the issue of safety in a statistically valid way, and such a trial is currently underway.

As pointed out in the Discussion section under Limitations, we agree that alternatives to our "standard" diagnostic evaluation exist, including electrocardiographic stress or stress echocardiography, which do not involve radiation exposure and may provide faster diagnostic time. Also, the article discusses at some length issues related to the need for a second diagnostic test in 24% of patients. Regarding whether CCTA patients were "fast tracked" through the system, there was a uniform notification method for nuclear medicine and CCTA interpreting physicians; both studies were performed and read emergently.

James A. Goldstein, MD, FACC
***Gilbert L. Raff, MD, FACC**

*Ministrelli Center for Advanced Cardiovascular Imaging
William Beaumont Hospital
Royal Oak, Michigan 48073
E-mail: graff@beaumont.edu

doi:10.1016/j.jacc.2007.05.012

REFERENCES

1. Gallagher MJ, Ross MA, Raff GL, et al. The diagnostic accuracy of 64-slice CT coronary angiography compared with stress nuclear imaging in emergency department low risk chest pain patients. Ann Emerg Med 2007;49:125–36.
2. Goldstein JA, Gallagher MJ, O'Neill WW, Ross MA, O'Neill BJ, Raff GL. A randomized controlled trial of multi-slice computed tomography for evaluation of acute chest pain. J Am Coll Cardiol 2007;48:863–71.